WHAT IS CLAIMED

1. A light transmission type image recognition device comprising:

a first transparent substrate having a plurality of transparent pixel electrodes formed in a two-dimensional array on its surface;

a second transparent substrate having a transparent faced electrode formed on its surface; and

a visual pigment similar protein oriented film layer and a transparent insulating layer which are arranged between both the electrodes.

2. The light transmission type image recognition device according to claim 1, wherein

the visual pigment similar protein oriented film layer is a bacteriohodopsin oriented film layer.

3. An image recognition sensor, wherein

a plurality of light transmission type image recognition devices according to claim 1 are arranged in the direction in which light is incident, and an optical filter is arranged between the adjacent light transmission type image recognition devices, so that images which differ in optical characteristics are respectively input to the light transmission type image recognition devices.

4. The image recognition sensor according to claim 3, wherein

the optical filter is an attenuation filter for reducing the optical density of light transmission, and

images which have different intensity variance are respectively input to the light transmission type image recognition devices.

5. The image recognition sensor according to claim 3, wherein

the optical filter is a filter for changing the direction of light paths, and

images which differ in focal length are respectively input to the light transmission type image recognition devices.

6. The image recognition sensor according to claim 3, wherein

the optical filter is a soft focus filter, and

images which differ in resolution are respectively input to the light transmission type image recognition devices.

7. The image recognition sensor according to claim 3, wherein

the optical filter is a chromatic aberration correction filter, and

images which differ in chromatic aberration are respectively input to the light transmission type image recognition devices.

8. The image recognition sensor according to claim 3,

wherein

the optical filter is a distortion aberration correction filter, and

images which differ in distortion aberration are respectively input to the light transmission type image recognition devices.

9. The image recognition sensor according to claim 3, wherein

the optical filters are optical filters for transmitting light beams having different wavelengths which are not less than a predetermined wavelength,

the lowest values of the wavelengths of the light beams which are respectively transmitted by the optical filters increase in the order arranged from the first stage, and

images which differ in wavelength region are respectively input to the light transmission type image recognition devices.

10. A moving object contour detecting apparatus for detecting the contour of a moving object on the basis of a differential response type time series signal output from each of pixel electrodes in a moving object detection device using a visual pigment similar photoelectric protein, comprising:

first means for calculating a time differential value of the time series signal output from each of the pixel electrodes;

second means for comparing the time differential value obtained by the first means with a threshold value for leading edge detection and a threshold value for trailing edge detection; and

third means for deciding whether an image input to the pixel electrode is a leading edge of the moving object, a trailing edge of the moving object, or others on the basis of the result of the comparison by the second means.

11. A moving object contour detecting method for detecting the contour of a moving object on the basis of a differential response type time series signal output from each of pixel electrodes in a moving object detection device using a visual pigment similar photoelectric protein, comprising:

a first step of calculating a time differential value of the time series signal output from each of the pixel electrodes;

a second step of comparing the time differential value obtained in the first step with a threshold value for leading edge detection and a threshold value for trailing edge detection; and

a third step of deciding whether an image input to the pixel electrode is a leading edge of the moving object, a trailing edge of the moving object, or others on the basis of the result of the comparison in the second step.

12. A moving object region detecting apparatus for

detecting a moving object region on the basis of a differential response type time series signal output from each of pixel electrodes in a moving object detection device using a visual pigment similar photoelectric protein, comprising:

first means for calculating a time differential value of the time series signal output from each of the pixel electrodes;

second means for comparing the time differential value obtained by the first means with a threshold value for leading edge detection and a threshold value for trailing edge detection;

third means for deciding whether an image input to the pixel electrode is a leading edge of the moving object, a trailing edge of the moving object, or others on the basis of the result of the comparison by the second means; and

fourth means for deciding whether or not the image input to the pixel electrode is in a moving object region on the basis of the result of the decision by the third means.

13. The moving object region detecting apparatus according to claim 12, wherein

the fourth means decides whether or not the image input to the pixel electrode is in a moving object region on the basis of the result of the decision by the third means and the previous result of the decision by the fourth means, and

the result of the decision indicating that the image

input to the pixel electrode is not in the moving object region is used as an initial value of the previous result of the decision by the fourth means.

14. A moving object region detecting method for detecting a moving object region on the basis of a differential response type time series signal output from each of pixel electrodes in a moving object detection device using a visual pigment similar photoelectric protein, comprising:

a first step of calculating a time differential value of the time series signal output from each of the pixel electrodes;

a second step of comparing the time differential value obtained in the first step with a threshold value for leading edge detection and a threshold value for trailing edge detection;

a third step of deciding whether an image input to the pixel electrode is a leading edge of the moving object, a trailing edge of the moving object, or others on the basis of the result of the comparison in the second step; and

a fourth step of deciding whether or not the image input to the pixel electrode is in a moving object region on the basis of the result of the decision in the third step.

15. The moving object region detecting method according to claim 14, wherein

the fourth step comprises the step of deciding whether

or not the image input to the pixel electrode is in a moving object region on the basis of the result of the decision in the third step and the previous result of the decision in the fourth step, and

the result of the decision indicating that the image input to the pixel electrode is not in the moving object region is used as an initial value of the previous result of the decision in the fourth step.